

**SECTION 23 84 10  
SNOW MELT SYSTEMS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies materials and procedures for the construction of snow melt systems.
- B. Provide a complete snow melt system as shown on the plans and as specified. Length of loops, pipe sizing and spacing shall be determined by manufacturer.
- C. Piping installed in the slab shall be HeatLink® cross-linked polyethylene (PEX) piping, or approved manufacturer, installed in loops with spacing and length per the manufacturer design calculations. The PEX pipe shall have one standard dimension ratio SDR 9 and the fittings shall have a nominal size from 1/4" to 2". Only fittings recommended by the PEX pipe manufacturer are acceptable for use with the PEX tube distribution system.

**1.2 RELATED WORK**

- A. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

**1.3 DESIGN REQUIREMENTS**

- A. Design all elements with the latest published version of applicable codes.

**1.4 QUALITY ASSURANCE**

- A. Products Criteria:
  - 1. When two or more units of the same type or class of materials or equipment are required, these units shall be products of one manufacturer.
  - 2. A nameplate bearing manufacturer's name or trademark, including model number, shall be securely affixed in a conspicuous place on equipment. In addition, the model number shall be either cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.

**1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.
- B. Manufacturer's Literature and Data:
  - 1. Pipe and tubing, with specification, class or type, and schedule.
  - 2. Pipe fittings, including miscellaneous adapters and special fittings.

- 3. Valves.
- 4. Manifolds.
- 5. Snow and moisture sensors.
- 6. Gages.
- 7. Thermometers and test wells.
- 8. Control panel.
- C. Coordination Drawings.
- D. As-Built Drawings of snow melt system.

- 1. One set of reproducible drawings.

#### **1.6 APPLICABLE PUBLICATIONS**

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Refer to the latest edition of all referenced Standards and codes.

- A. American Society for Testing and Materials (ASTM):
  - F876.....Standard Specification for Cross-linked  
Polyethylene (PEX) tubing
  - F877.....Standard Specification for Cross-linked  
Polyethylene (PEX) Hot and Cold Water  
Distribution Systems
- B. CSA International:
  - 137.5.....Cross-linked Polyethylene (PEX) Tubing Systems  
for Pressure Applications
- C. Plastic Pipe Institute:
  - TR4.....Pressure/Temperature Rating 100 PSI at 180°F

#### **1.7 WARRANTY**

- A. All PEX pipes shall carry a 25 year guarantee from the manufacturer.
- B. The Contractor shall remedy any defect due to faulty material or workmanship and pay for any damage to other work resulting therefrom within a period of two years from final acceptance. Further, the Contractor will furnish all manufacturers and supplier's written guarantees and warranties covering materials and equipment furnished under this Contract.

**PART 2 - PRODUCTS****2.1 SLAB HEATING PIPE AND INSTALLATION**

- A. For on grade projects, PEX pipe shall be placed with either tracking or tied to either a 6" x 6" wire mesh or a rebar with an even grid pattern, such as 12" x 12", 18" x 18", or 24" x 24" using plastic tie straps.
- B. Under no circumstances shall the PEX pipe be tied with a binding wire. The installation shall be in strict accordance with the manufacturer's instructions. If a PEX tube is kinked during installation, a heat gun may be used to repair the kinked portion in accordance with the manufacturer's recommendation.
- C. Ensure that a minimal bending radius of 6 times the pipe diameter is maintained: 5/8" piping = 4" radius, 3/4" piping = 5" radius.
- D. Piping shall have a fully enclosed protective conduit elbow where pipes penetrate the concrete flooring.
- E. Provide a 12-inch protective sleeve where PEX pipe crosses expansion joints.
- F. Only fittings approved by the PEX pipe manufacturer shall be used.
- G. Do not install PEX pipe within 12-inches of any recessed light fixtures.
- H. Closely coordinate in-slab piping layout with other trades. Avoid sanitary drain piping penetrations, electrical conduit penetrations, partition wall anchors, furniture anchors, etc. through floor assemblies.
- I. In all areas where other trades will be drilling, coring or anchoring other equipment, furniture, or structures to the slab, the Contractor shall mark locations of the PEX pipes to avoid penetration of fasteners used (i.e., Hilti, Ramset, etc.).
- J. If in-slab repair joints are necessary, only brass insert compression couplings as approved by the PEX pipe manufacturer shall be used. Wrap all couplings with PVC tape or compatible material prior to concrete pouring to prevent any possible corrosion.
- K. System shall be controlled with an outdoor temperature reset controller in conjunction with an outdoor sensor and a secondary supply water temperature sensor. Controller shall operate a fully automatic modulating temperature mixing device. Snow-melting control shall be provided by an outdoor reset controller together with a snow/ice sensor

or detector that activates and controls the system based on moisture detection and slab temperature.

## **2.2 HYDROSTATIC/AIR TESTING**

- A. Pressure test PEX pipes to 80 to 100 psi (hydrostatic) or 60 to 80 psi (air test) for a minimum of 24 hours prior to and during concrete pouring, or before any piping enclosure.
- B. Each PEX pipe loop shall be individually filled in either test.

## **2.3 MANIFOLD/HEADER**

- A. Provide factory recommended 2-inch copper manifold with ¾-inch spuds for field attachment of isolation ball valve (supply manifold) and venture type balancing valve (return manifold). Plastic, brass or stainless steel manifolds designed for radiant floor systems will not be allowed for use in snow melt systems.
- B. Manifold assembly temperature and pressure ratings shall meet or exceed the following:
  - 1. Working pressure: 87 psi.
  - 2. Operating Temperature: 160° F.
  - 3. Maximum Temperature: 180° F.
- C. All loop numbers shall be clearly marked on PEX pipe wall before being connected to manifold. Loop number shall be printed and placed on each individual module in the manifold tag slot with the identification tags provided. Pipe loops shall be identified to allow for system balancing in the future.
- D. Manifolds shall be housed in an accessible manifold housing/enclosure. Housing shall be pre-fabricated metal access box with hinged doors to allow for unobstructed access.
- E. Manifolds shall be HeatLink Copper series or approved equal.

## **2.4 SNOW MELT CONTROL**

- A. Snowmelt control shall be a microprocessor based control that regulates precisely the rate at which heat is transferred into a snow-melting slab. The control shall protect the slab from being brought up to temperature too quickly. In addition, the control shall sense the return water temperature to the heat source to avoid thermal shocks.
- B. The ice/snow detector shall signal the controller to the presence of snow or ice at specific selected surface temperature and moisture conditions. As well as reading temperatures, the detector/sensor shall detect the presence or lack of moisture.

- C. In the presence of a possible power outage or fault in the detector under freezing weather conditions, the controller shall activate a warning contact.

### **PART 3 - EXECUTION**

#### **3.1 SYSTEM START-UP**

- A. Thoroughly clean, degrease and flush the new system before antifreeze solution is added. System cleaning shall be in accordance with the manufacturers' recommendations
- B. Add to slab heating system no less than 50% glycol/water mixture for freeze protection and system corrosion inhibitor.
- C. Test corrosion and/or antifreeze solution for protection level and maintain records in a manual to keep track of water quality control.

#### **3.2 TESTING, PROTECTION, AND BALANCING**

- A. Contractor shall be responsible for ensuring all necessary adjustments to the snow melt system equipment and controls, and that the entire system is fully tested, balanced and operating per specification.
- B. All maintenance data and operation instructions on system controller shall be provided and kept on site complete with a copy of piping layout. Data shall be neatly assembled and placed in a protective binder.

#### **3.3 FINAL CLEAN-UP**

Remove all debris, rubbish and excess material from the site.

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